

SECRET

Approved For Release 2002/01/22 : CIA-RDP72-00337R000100180002-7

NO FOREIGN DISSEM

The Soviet Lunar Exploration Programs

Luna 16, Zond 8, and Luna 17 are the most recent and most successful launches in the Soviet moon exploration program. Prior to these three, twelve SL-12 boost vehicles had been launched in support of lunar research, of which only five were given designations in the Luna/Zond series. The remaining seven were failures and were unnamed or given Cosmos numbers. Even some of the designated vehicles were probably partial failures (e.g., Luna 15 which crash-landed on the moon's surface).

The Soviets have probably expended the equivalent of about \$550 million for SL-12 launched circumlunar missions. This cost assumes that the spacecraft used for these missions is essentially the same as that used on Soyuz missions, and covers eight events -- Zond 4 through Zond 8, plus three failures. Also the Soviet lunar landing program using the SL-12 booster -- Luna 15 through Luna 17 and four failures -- cost the equivalent of about \$800 million.

This total of \$1.35 billion applies to the fifteen SL-12 launch vehicles, their associated spacecraft, and the direct and indirect launch costs (i.e., tracking/data acquisition and administration), and is computed as though the programs were conducted in the U.S. Not included is the prorated cost of the SL-12 R&D program including four vehicles that were probably launched for engineering/feasibility purposes, the prorated R&D cost of the Soyuz spacecraft research, nor the launch facility costs. The accuracy of these costs quoted above is estimated at $\pm 25\%$.

The scientific benefits derived from the program so far have been minimal. Luna 16 and Luna 17 probably have been the only true sources of scientific intelligence. While the Zond 8 return trajectory differed from previous circumlunar events, the mission was essentially a repeat of Zonds 5, 6, and 7.

Luna 16 returned a sample of lunar soil to earth for examination. The sample was dust-like, 35 centimeters long, 7.5 to 10 centimeters in diameter and weighed as much as 200 grams. The sample was returned from the previously

SECRET

NO FOREIGN DISSEM

Approved For Release 2002/01/22 : CIA-RDP72-00337R000100180002-7

SECRET

Approved For Release 2002/01/22 : CIA-RDP72-00337R000100180002-7

NO FOREIGN DISSEM

unexplored Sea of Fertility and may, because of this, provide some unique contribution to the study of the moon's composition. Radiation and surface structure measurements were also made. The scientific value of this sample has probably been reduced due to the lack of precise information on the landing location. 25X1D



Luna 17 has been the most ambitious attempt to gather scientific data concerning the moon's surface and environment. Lunokhod 1 has a limited capability to test the chemical and mechanical properties of the lunar soil at different places in the Sea of Rains. Again this is an area remote from previous surface exploration and may provide some unique data.

A small X-ray telescope has been placed aboard Lunokhod 1. The instrument contains a measuring device for X-ray protons in the spectrum of 2 to 10 angstrom units, with the field of vision being three degrees. This instrument is designed to investigate sources of radiation in the universe. Additionally, a French-built laser reflector is aboard Lunokhod 1 but we do not know if the Soviets have successfully located the reflector. In general, the Lunokhod experiment is more engineering in nature than scientific.

Supplementary to the above experiments, other less-easily defined benefits were also accrued. The Soviets have gathered experience in operating within the lunar environment, checked out systems and equipment in this environment and successfully operated a self-propelled vehicle by remote control. These are a few of the "intangible" benefits derived from the lunar investigation program. 25X1D



- 2 -

SECRET

Approved For Release 2002/01/22 : CIA-RDP72-00337R000100180002-7

NO FOREIGN DISSEM

SECRET

NO FOREIGN DISSEM

The television system used is similar to Soviet commercial television which would allow pictures to be transmitted every 0.04 seconds. However, the Soviets have announced that to conserve power on Lunokhod 1 a video display is received on earth only every 10 seconds during

25X1D

25X1D

Although the Soviets appear to have solved many of the booster problems which have plagued these programs, and have successfully accomplished two lunar soft landings, the scientific return from this effort has not been of much significance.

- 3 -

SECRET

NO FOREIGN DISSEM